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Prescribing in children and adolescents CHAPTER 5 Rapid tranquillisation (RT) in children and adolescents As in adults, a comprehensive assessment and effective treatment plan undertaken by staff skilled in the use of de-escalation techniques and appropriate placement of the patient are key to minimising the need for enforced parenteral medication. The differential diagnoses for agitated or challenging behaviour can be broad, but there is concern that RT may be disproportionately used in a neurodiverse population where other strategies may be more appropriate and the outcome more predictable.1,2 Healthcare professionals undertaking RT and/or restraint in children and adolescents should be trained and competent in undertaking these procedures in this population and should be clear about the legal context for any restrictive practices they employ. Be particularly cautious when considering high-potency antipsychotic medication (e.g. haloperidol) especially for those who are neuroleptic naïve, because of the increased risk of acute dystonic reactions in this age group.3 Children are particularly prone to acute extrapyramidal effects of psychotropic and physical medication.4 In the UK, NICE recommends using intramuscular lorazepam (and recommends no other drug).5 Evidence suggests that lorazepam is effective (at a median dose of 1mg) and rarely causes respiratory depression resulting in oxygen desaturation.1 Reviews support the use of a range of SGA drugs6 with the most frequently used agent being olanzapine, which has evidence of its safety and efficacy.7 A wide dose range is given here for medication used in RT. This is partly a consequence of the wide range of body mass in individuals aged from under 10 to 18 years. Caution is required, especially for younger children, but in older adolescents consider the use of adult doses, especially in those who are not drug naïve and where doses at the lower end of the quoted dose range have proved ineffective. A summary is given in Table 5.11. Table 5.11 Recommended drugs for rapid tranquillisation if the oral route is refused or has proven ineffective. Medication Dose Onset of action Comment Olanzapine IM8,9 2.5–10mg 15–30 minutes Possibly increased risk of respiratory depression when administered with benzodiazepines, particularly if alcohol has been consumed. Separate administration by at least 1 hour. Haloperidol IM10 0.025–0.075mg/kg/dose (max. 2.5mg) IM Adolescents >12 years can receive the adult dose (2.5–5mg) 20–30 minutes Must have parenteral anticholinergics present in case of laryngeal spasm or other dystonia (young people

more vulnerable to severe dystonia). Adult data suggest co-administration of promethazine may reduce EPS risk.11 ECG is essential Lorazepam* IM12 <12 years: 0.5–1mg;

> 12 years: 0.5-2mg 20–40 minutes Slower onset of action than midazolam Only treatment recommended by NICE Flumazenil is the reversing agent for all benzodiazepines. (Continued)

624 The Maudsley® Prescribing Guidelines in Psychiatry CHAPTER 5 Oral medication should always be offered (and repeated if necessary if the young person is willing to take it) before resorting to parenteral treatment. Oral alternatives such as buccal midazolam14 and inhaled loxapine20 have not been widely investigated in children in RT and have limited availability. Buccal midazolam is commonly used for seizures in children. Monitoring after RT is the same as in adults (see Chapter 3). Medication Dose Onset of action Comment Midazolam* IM, IV or buccal12 0.1–-0.15mg/kg IM Buccal midazolam 300–500mcg/kg or 6–10 years = 7.5mg;

> 10 years = 10mg 10–20 min IM (1–3 min IV) Quicker onset and shorter duration of action than lorazepam or diazepam IV administration should only be used (usually as a last resort) with extreme caution and where resuscitation facilities are available. Quicker onset and shorter duration of action than haloperidol When given as buccal liquid, onset of action is 15–30 minutes.13 There are some published data of its use in mental health but only in adults;14 buccal liquid is unlicensed for this use. Diazepam* IV (not for IM administration)15 0.1mg/kg/dose by slow IV injection Max. 40mg total daily dose <12 years and 60mg >12 years 1–3 minutes Long half-life that does not correlate with length of sedation Possibility of accumulation Never give as IM injection. Ziprasidone IM16,17 10–20mg 15–30 minutes IM Apparently effective QT prolongation is of concern in this patient group. ECG is essential. Aripiprazole IM18,19 9.75mg - 15–30 minutes Evidence of effectiveness in adults but no clinical trial data for children and adolescents Promethazine IM <12 years: 5–25mg (max. 50mg/day) 12 years: 25–50mg (max. 100mg/day) Up to 60 minutes An effective sedative, although has a slow onset of action. Useful if the cause of behavioural disturbance is unknown and there is concern about the use of antipsychotic medication in a child or young person. *Note that young people are particularly vulnerable to disinhibitory reactions with benzodiazepines. EPS, extrapyramidal symptoms. Table 5.11 (Continued)

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